end up being unpaired to add spectrum to AWS-3). Finally, AWS-3 (2155-2175 MHz) is unpaired spectrum and the FCC is awaiting resolution of potential pairing from spectrum currently allocated to the Federal government. In general, the FCC appears unlikely to complete service and auction rules for these two spectrum bands for many years.

V. COMBINING T-MOBILE USA AND AT&T SPECTRUM AND NETWORKS PROVIDES A CLEAR PATH TO LTE.

36. Reviewing all of the facts, I concur with the benefits of the transaction analysis provided in Section V of the Hogg Declaration. The merger will allow the combined entity access to enough spectrum and network infrastructure to increase capacity significantly, and to achieve demonstrable service improvements for its subscribers that could not occur but for the transaction. It will provide a clear path for LTE for T-Mobile USA in the most effective, expeditious manner possible.

37. First, as noted above, the efficiencies gained from combining AT&T and T-Mobile USA's networks are substantial. Redundant GSM control channel spectrum will no longer be required, freeing up 4.8 to 10 MHz of spectrum for the combined company. Moreover, in areas where AT&T and T-Mobile USA's 1900 MHz PCS spectrum overlap, the existing GSM channels can be more efficiently pooled, improving service to both company's customers.

38. As AT&T and T-Mobile USA both rely upon the same network technology (GSM and HSPA), **[Begin Confidential Information]**

[End Confidential Information].

Moreover, T-Mobile USA's network grid is complementary to AT&T's network, allowing T-Mobile USA's sites to achieve "instant" cell splitting (as discussed in more detail in the Hogg

Declaration). This in turn allows the combined company an extensive increase in network capacity that would otherwise require years of new site builds to accomplish.

39. Finally, the AT&T and T-Mobile USA (PCS and AWS-1) spectrum bands are complementary. This means that: (1) the efficiency gains discussed above are more pronounced and (2) AT&T can readily use T-Mobile USA's AWS-1 spectrum for LTE in the most efficient fashion in combination with its own AWS-1 spectrum. Moreover, the PCS spectrum holdings of T-Mobile USA can be more efficiently used for both GSM (improving dropped and blocked call rates for customers) and HSPA+ (allowing for the launch of additional carriers and easing capacity concerns in congested markets) following this transaction.

40. In sum, the combination of AT&T with T-Mobile USA will allow a clear, efficient path to LTE that would not otherwise exist for T-Mobile USA. This will provide GSM, HSPA+ and LTE services for customers of the combined entity in a better, more rapid fashion than any other alternatives. It will allow for broader coverage, greater capacity, and a robust and efficient deployment of LTE. The merger will result in a company with sufficient spectrum and capacity to offer LTE services on a scale necessary to compete with other companies while continuing to support legacy services and customers.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

DATED: April 19, 2011

By: _____

Dr. Kim Kyllesbech Larsen
Senior Vice President
Deutsche Telekom AG

Decl. of Dennis W. Carlton,
Allan Shampine, and Hal Sider

REDACTED -- FOR PUBLIC INSPECTION

DECLARATION OF DENNIS W. CARLTON, ALLAN SHAMPINE AND HAL SIDER

I. INTRODUCTION

A. QUALIFICATIONS

Dennis W. Carlton

1. I, Dennis W. Carlton, am the Katherine Dusak Miller Professor of Economics at the Booth School of Business of The University of Chicago. I received my A.B. in Applied Mathematics and Economics from Harvard University and my M.S. in Operations Research and Ph.D. in Economics from the Massachusetts Institute of Technology. I have served on the faculties of the Law School and the Department of Economics at The University of Chicago and the Department of Economics at the Massachusetts Institute of Technology. I specialize in the economics of industrial organization. I am co-author of the book Modern Industrial Organization, a leading text in the field of industrial organization, and I also have published over 100 articles in academic journals and books, including several articles on the economics of the telecommunications industry. In addition, I am Co-Editor of the Journal of Law and Economics, a leading journal that publishes research applying economic analysis to industrial organization and legal matters, serve on the Editorial Board of Competition Policy International, a journal devoted to competition policy, and serve on the Advisory Board of the Journal of Competition Law and Economics. I have also served as an Associate Editor of the International Journal of Industrial Organization and Regional Science and Urban Economics, and on the Editorial Board of Intellectual Property Fraud Reporter.

2. In addition to my academic experience, I served as Deputy Assistant Attorney General for Economic Analysis, Antitrust Division, U.S. Department of Justice from October 2006 through January

2008. I also served as a Commissioner of the Antitrust Modernization Commission, created by Congress to evaluate U.S. antitrust laws. I have served as a consultant to the Department of Justice on the Horizontal Merger Guidelines (1992) of the Department of Justice and Federal Trade Commission, as a general consultant to the Department of Justice and Federal Trade Commission on antitrust matters, and as an advisor to the Bureau of the Census on the collection and interpretation of economic data.

3. I also am a Senior Managing Director of Compass Lexecon, a consulting firm that specializes in the application of economics to legal and regulatory issues and for which I previously served as President when the firm was called Lexecon. I have provided expert testimony before a variety of courts and regulatory agencies in Canada, the United States, Europe and New Zealand and have submitted testimony to the Federal Communications Commission (FCC) in a variety of prior matters. A copy of my curriculum vita is attached in Exhibit 1 to this report.

Allan L. Shampine

4. I, Allan L. Shampine, am a Vice-President of Compass Lexecon. I received a B.S. in Economics and Systems Analysis (Summa Cum Laude) from Southern Methodist University in 1991, an M.A. in Economics from the University of Chicago in 1993, and a Ph.D. in Economics from the University of Chicago in 1996. I have been with Compass Lexecon (previously Lexecon) since 1996. I specialize in applied microeconomic analysis and have done extensive analysis of network industries, including telecommunications and payment systems. I am the editor of the book Down to the Wire: Studies in the Diffusion and Regulation of Telecommunications Technologies, and I have also published a variety of articles on the economics of telecommunications and network industries. In addition, I have previously provided economic testimony on telecommunications issues on a variety of matters before the FCC and state public utility commissions. A copy of my curriculum vita is attached in Exhibit 1 to this report.

Hal S. Sider

5. I, Hal S. Sider, am a Senior Vice-President of Compass Lexecon. I received a B.A. in Economics from the University of Illinois in 1976 and a Ph.D. in Economics from the University of Wisconsin (Madison) in 1980. I have been with Compass Lexecon (previously Lexecon) since 1985, having previously worked in several government positions. I specialize in applied microeconomic analysis and have performed a wide variety of economic and econometric studies relating to industrial organization, antitrust and merger analysis. I have published a number of articles in professional economics journals on a variety of economic topics and have testified as an economic expert on matters relating to industrial organization, antitrust, labor economics and damages. In addition, I have provided economic testimony on telecommunications issues on a variety of matters before the FCC and state public utility commissions. A copy of my curriculum vita is attached in Exhibit 1 to this report.

B. SUMMARY OF CONCLUSIONS

6. We have been asked by counsel for AT&T Inc. (AT&T) to present our assessment of competitive issues raised by AT&T's proposed acquisition of T-Mobile USA Inc. (T-Mobile USA) from Deutsche Telekom AG. This initial evaluation is based on our familiarity with the telecommunications industry, our review of publicly available documents and data sources, documents and information provided to us by the companies and discussions with executives of all three companies. We will continue to analyze additional data and our documents during the course of this proceeding and use that information to supplement our analysis as appropriate.

7. We conclude that the proposed transaction will promote competition by enabling the merged firm to achieve engineering-based network synergies that increase network capacity beyond the levels that AT&T and T-Mobile USA could achieve if the two companies continued to operate independently. These additions to capacity will permit the merged firm to expand output beyond the

sum of the output levels that would be achieved if the firms operated independently. A proper antitrust analysis of this transaction must account for the existing capacity limitations and the effect of this transaction on increasing capacity, among other factors. Given the large projected increases in demand for wireless data services, the recognized shortage of spectrum available in many areas to serve increased demand, the ongoing competitiveness of the wireless industry, the cost savings expected to result from the transaction, and the business plans for the merged firm, we conclude that the merged firm will have strong incentives to use this additional capacity to increase output compared to levels that would be expected in the absence of the proposed transaction. These factors are central to the analysis of the proposed transaction and our conclusion that it will not result in harm to consumer welfare.

8. While the FCC has always examined wireless mergers on an area-by-area basis, the overriding conclusion here holds whether competition is analyzed at a national or local level: the proposed transaction will increase consumer welfare by expanding output, improving quality and lowering price relative to levels expected in the absence of the proposed transaction. Nonetheless, the usefulness of an area-by-area analysis in this matter is reinforced by the value of examining not only the local competitive conditions but also local capacity constraints faced by AT&T and T-Mobile USA.

9. The major reasons for the conclusions explained in this Declaration are as follows:

- As the FCC has recognized, demand for wireless services has grown dramatically in recent years, and this growth is projected to continue due in part to the growth in the use of smartphones and connected devices and growth in demand for video-based Internet services. The FCC has concluded that spectrum currently dedicated to wireless uses is far below the levels needed to meet the projected increases in demand.
- AT&T and T-Mobile USA have limited ability to expand capacity and output in response to the projected growth in demand due both to their limited spectrum holdings and

their inability to readily redeploy spectrum needed to continue providing service to existing subscribers. New spectrum is not expected to be available for use by wireless carriers for at least several years and AT&T and T-Mobile USA face limited alternatives for quickly addressing capacity shortfalls in the near term.

- AT&T and T-Mobile USA have complementary spectrum and network assets that will allow the merged firm quickly to expand capacity and output above the levels that each company could achieve independently. Engineering analysis indicates that a combination of the networks can increase capacity by: (i) creating a denser network with additional cells that increases aggregate capacity; (ii) increasing the spectrum available for the provision of service due to the elimination of redundant control channels for the firms' GSM networks; (iii) generating "channel pooling efficiencies" which enable a firm's existing spectrum to serve more subscribers due to the higher probability of obtaining an open channel when channels are grouped in larger pools; (iv) facilitating migration of subscribers from less efficient to more efficient technologies; and (v) expanding coverage of AT&T's "next generation" Long Term Evolution (LTE) network. AT&T will have strong incentives to expand output given the strong projected growth in demand for data services and competitive pressures to attract data users by offering innovative and high-quality services. For example, AT&T has been an industry leader in introducing wireless devices such as the iPhone and iPad that have spurred rapid growth in wireless data use.
- The merged firm will continue to face significant competition after the proposed transaction due in part to the fact that not all firms face the same potential capacity limitations in the same areas at the same time. AT&T will face competition not only

from Verizon Wireless and Sprint, but also from low-cost, non-contract carriers MetroPCS and Leap/Cricket which offer nationwide, or near-nationwide, pricing and are attracting an increasing number of subscribers. In addition, strong regional carriers such as U.S. Cellular often serve a substantial share of subscribers in the areas where they provide service and offer nationwide pricing. At least three of these competitors, in addition to AT&T and T-Mobile USA, are present in a large majority of areas in which AT&T and T-Mobile USA compete.

- The merged firm will also face competition from new entrants including LightSquared and Clearwire. Lightsquared is now deploying an LTE network that it plans to use to provide wholesale service to areas covering 260 million people in the U.S. by 2015, and Clearwire currently provides WiMax service on both a retail and wholesale basis to areas covering 112 million people. In the future, AT&T may also face competition from firms that hold spectrum but have not yet launched service, such as SpectrumCo (or the cable companies that own SpectrumCo), DISH, as well as firms that can enter when the FCC auctions new spectrum. Each of these potential entrants, as well as newer carriers such as MetroPCS and Leap, has the ability to "leapfrog" existing carriers by deploying "next generation" technologies, as they do not need to serve an embedded base of subscribers using "last generation" technologies.
- Absent this transaction, T-Mobile USA's competitive significance is likely to decline in the future due, in part, to the lack of sufficient spectrum to allow it a clear path to deploying LTE, a problem that analysts -- and T-Mobile USA itself -- recognize will put T-Mobile USA at a competitive disadvantage relative to other carriers. The moderate

decline in T-Mobile USA's subscriber share in recent years also indicates that its competitive significance is likely to continue to decline in the future.

- Concerns about unilateral anticompetitive effects do not apply given the expected expansion in output from the proposed transaction. It is well recognized that concerns about unilateral effects are eliminated or mitigated when: (i) firms face high and rising marginal costs of expanding output; (ii) firms face strong demand (so they operate on the steep or vertical portion of the marginal cost curve); and (iii) mergers result in synergies that increase capacity or, equivalently, reduce the marginal cost of expanding output. These are precisely the circumstances that characterize the proposed transaction: (i) both AT&T and T-Mobile USA face high and rising marginal costs of expanding output; (ii) demand for data services is projected to grow dramatically; and (iii) the proposed transaction promises to result in engineering-based synergies that will increase network capacity. Further, the post-merger business plans described in the accompanying declarations of AT&T's David Christopher and John Donovan confirm that AT&T plans to use the increased capacity resulting from the proposed transaction to expand output.
- If one misapplies standard models of unilateral effects that are based on the assumptions that pre-merger output can be readily expanded and that a merger will not result in an expansion of capacity, then one can obtain misleading results about the likelihood that the proposed merger will harm competition.
- Concerns about unilateral effects are also reduced by the substantial differences in the characteristics of T-Mobile USA and AT&T subscribers: For example, T-Mobile USA's subscribers are less heavy data users than AT&T's; enterprise customers account for a

substantially smaller share of T-Mobile USA subscribers compared to AT&T; the T-Mobile USA subscriber base includes a substantially larger share of "non-contract" customers compared to AT&T, which predominantly serves "contract" subscribers; and T-Mobile USA's subscribers are characterized by much higher customer separation rates, or "churn" compared to AT&T's.

- For similar reasons, typical concerns about coordinated anticompetitive effects do not apply due in part to the present and future capacity constraints faced by AT&T and T-Mobile USA and the projected growth in demand for data services. Given these circumstances, the merged firm has strong incentives to expand output in response to the reduction in marginal cost (or equivalently, increase in capacity) resulting from the proposed merger and not to restrict output due to coordination with other firms that face different marginal costs. Apart from capacity considerations, concerns about coordinated effects are addressed by a variety of industry characteristics including: the diversity of wireless firms and their business strategies; the multidimensional nature of service offerings; the complex nature of industry pricing; and differences across firms with respect to technology, handset offerings, spectrum holdings, capacity utilization, geographic network coverage and differences in the identity of carriers operating in different areas. The importance of competition to gain long-term advantages by offering service innovations also reduces concerns about coordinated effects.
- Finally, the proposed transaction does not eliminate a "maverick" from the wireless industry. While mavericks are often defined as firms that grow by disrupting competition, T-Mobile USA's share of wireless subscribers has been declining modestly in recent years. Past FCC comments also indicate that none of the major pricing or

service innovations in recent years was initiated by T-Mobile USA. To the extent that T-Mobile USA's prices are lower than those of AT&T and Verizon Wireless, the fact that T-Mobile USA's share of retail subscribers has not been growing indicates not that it is a price leader, but rather a recognition that customers perceive certain dimensions of T-Mobile USA service are lacking relative to those offered by competitors.

II. RATIONALE FOR THE PROPOSED TRANSACTION

A. AT&T AND T-MOBILE USA LACK ADEQUATE CAPACITY TO EFFICIENTLY SERVE THE LARGE PROJECTED GROWTH IN THE DEMAND FOR WIRELESS DATA SERVICES.

10. The proposed transaction promises to create additional capacity needed to serve the large projected increases in the demand for wireless service and to improve the quality of wireless service provided to AT&T and T-Mobile USA subscribers. Due to the current demand and large projected increase in demand for wireless data services, the networks operated by AT&T and T-Mobile USA are now at or near capacity in many areas and both firms face high and increasing costs of serving additional customers.

11. The ability of AT&T and T-Mobile USA to support new subscribers and traffic is now constrained by available spectrum, whether one examines spectrum now held by each firm, spectrum that can be acquired from others, or spectrum that the FCC will allocate and will become available to wireless services at some point in the future. In addition to limitations of available spectrum, the ability of AT&T and T-Mobile USA to support new subscribers and additional usage is limited by the lengthy time and limited efficacy associated with expanding network capacity by deploying new cell sites,

offloading traffic using WiFi, distributed antenna systems (DAS) or upgrading networks to use more spectrally efficient technologies.[1]

12. As explained in the accompanying declarations of William Hogg, AT&T's Senior Vice President of Network Planning and Engineering and Kim Larsen, Deutsche Telekom's Senior Vice President for Technology Service and International Network Economics, the large projected growth in the demand for data services means that both firms are or will soon be capacity constrained in certain areas, or will otherwise face a significant deterioration in service quality. As explained in these declarations and summarized briefly below, combining AT&T's and T-Mobile USA's network assets will enable the merged firm to take advantage of a variety of engineering-based network synergies which will increase capacity beyond the sum of the levels the two companies could achieve if operated independently and enable the merged firm to expand output beyond the sum of the levels that the two networks could achieve independently. The increase in capacity of the combined firm that is expected to result from the proposed transaction will benefit consumers by expanding output and improving service quality. This essential point bears repeating. Even if one were to oversimplify the nature of wireless competition and mischaracterize this industry as consisting of only four nationwide players, the transaction would be pro-competitive and would benefit consumers by creating new capacity, thereby leading to greater output and lower prices compared to the levels that would exist in the absence of the proposed transaction.

13. The competitive impact of the proposed transaction also needs to be evaluated in the context of the highly dynamic and rapidly evolving wireless telecommunications industry. Over the last

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1. The term capacity constraint, as used in this declaration, should not be thought of as a strict engineering limit on the number of subscribers that can be served by a network. Instead, from an economic perspective, a firm is said to face a capacity constraint when it faces a steeply rising cost of serving additional subscribers (holding quality constant). In the context of the wireless industry, increasing subscribers on the existing network and spectrum can lead to reduction in network quality or service.

15 years there has been large and continuous growth in the number of wireless voice subscribers, as well as dramatic increases in the utilization of wireless services per subscriber. This expansion in industry output has been accompanied by a dramatic reduction in industry pricing. Additionally, wireless service providers have expanded their product offerings, especially the availability of high quality mobile data services.

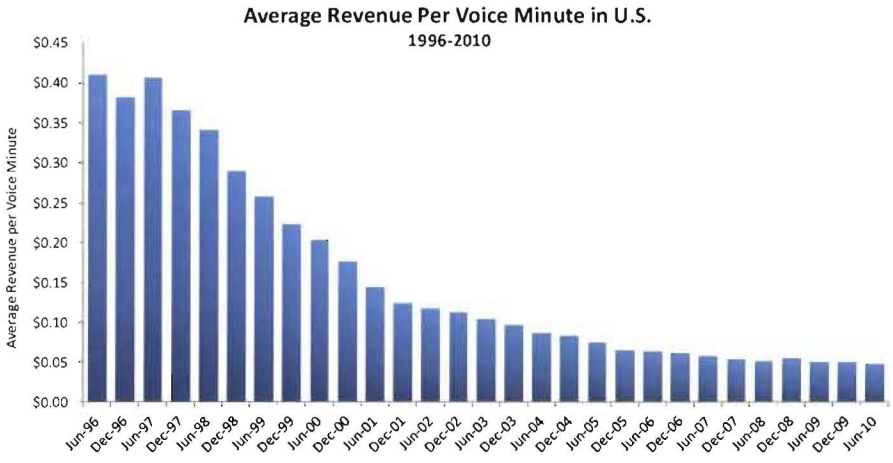
14. To put this into perspective, the number of wireless subscribers has grown from 38 million in June 1996 to 293 million in June 2010, an increase of over 650 percent.[2] In addition, the usage of voice services by subscribers has increased dramatically over this period, with the average monthly voice minutes of use increasing by more than 475 percent, from 119 to 686 minutes per subscriber.[3] Together, the combination of increasing numbers of subscribers and usage per subscriber has led to an explosion in wireless voice service. Between June 1996 and December 2010, total wireless voice minutes in the United States increased from 24 billion to 1.1 trillion, an increase of roughly 4,600 percent.[4] In the past two years, total voice minutes on wireless networks have leveled off, but this has been offset by rapidly increasing use of wireless data applications including texting, email, and Internet access.

15. The dramatic growth in the demand for wireless voice services has been driven in part by large price declines, with carriers' average revenue per voice minute falling from $0.41 per minute in June 1996 to less than $0.05 per minute in June 2010, a decline of 88 percent.[5] This growth in output

2. CTIA, "CTIA's Wireless Industry Indices Mid-Year 2010 Results," November 2010, Chart 3, p. 24.
3. CTIA, "CTIA's Wireless Industry Indices Mid-Year 2010 Results", November 2010, Table 86, pp. 204-205.
4. CTIA, "CTIA's Wireless Industry Indices Mid-Year 2010 Results", November 2010, Table 85, pp. 202-203; http://files.ctia.org/pdf/CTIA_Survey_Year_End_2010_Graphics.pdf/
5. Available data do not permit calculation of average revenue per voice minute for the second half of 2010. In inflation adjusted terms, average revenue per voice minute fell by 92 percent between June 1996 and June 2010.

and reduction in prices was achieved in part through past mergers which led to the creation of more efficient carriers.

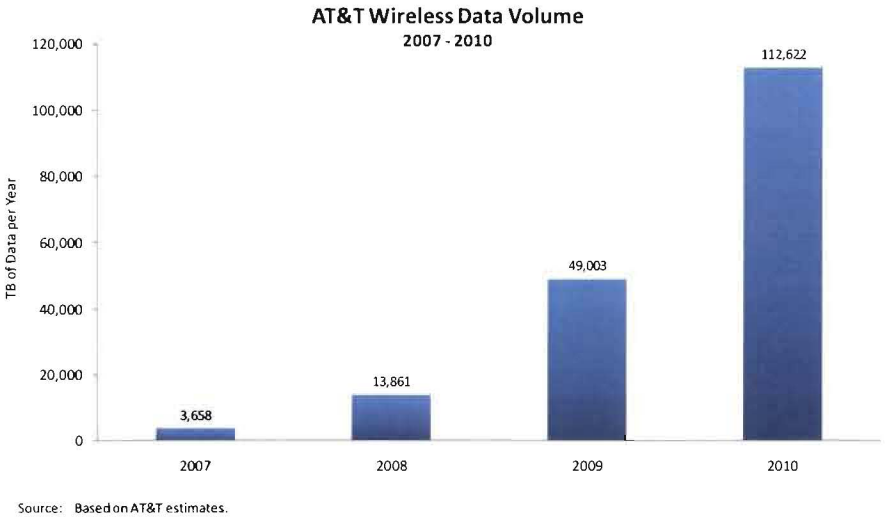
Figure 1



Source Figures based on application of FCC methodology to CTIA data; FCC, *Fourteenth CMRS Competition Report*, Table 19, pp.112-114; CTIA, *CTIA's Wireless Industry Indices Mid-Year 2010 Results*, November 2010: Table 34, p 94; Table 35, p. 95; Table 52, pp. 121-122; Table 78, pp 187-88; Table 86, pp. 204-205

16. In recent years, the growth of wireless services has been driven by increased demand for data services including text, email, and Internet access. For example, AT&T's subscribers wireless data use in 2010 was 31 times that in 2007.

Figure 2



17. Growth in output of wireless data services has accompanied a dramatic decline in prices for data services. AT&T estimates indicate that average revenue per megabyte (MB) for its subscribers fell by roughly **[Begin Confidential Information] [End Confidential Information]** percent between 2007 and 2010.

Figure 3

[Begin Confidential Information]

[End Confidential Information]

18. The expansion in the demand for wireless data services in recent years is also reflected in the share of total wireless industry revenue that is accounted for by data services. Data from the industry association CTIA show that the share of wireless industry revenues from data services has increased from (essentially) 0 in June 1999 to 31 percent in June 2010.[6]

19. This growth in the demand for wireless data services is due in part to the widespread adoption of smartphones, such as the iPhone, which allow for improved wireless web browsing, video and other data services and were offered with unlimited data plans. For example, data from the FCC indicate that the number of mobile wireless data connections increased from 26.5 million in December 2008 to 71 million in June 2010.[7]

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6. CTIA, "CTIA's Wireless Industry Indices Mid-Year 2010 Results," November 2010, Chart 28, p. 124.
7. FCC, "Internet Access Services: Status as of June 30, 2010," March 2011, Table 1, p. 15. The FCC "requires mobile wireless providers to report the number of subscribers that have a capable device (as discussed above) for which the subscription includes a data plan for transferring, on a monthly basis, either a specified or an unlimited amount of data to and from Internet sites of the subscriber's choice, and *excluding* subscribers whose choice of content is restricted to only

20. Smartphone adoption among AT&T subscribers has been higher than industry-wide totals due in part to the introduction of a portfolio of innovative devices including the iPhone.[8] The rapid adoption of these devices is contributing to the capacity problems faced by AT&T.[9] In December 2010, data revenues accounted for **[Begin Confidential Information] [End Confidential Information]** percent of total service revenues, up from **[Begin Confidential Information] [End Confidential Information]** percent in January 2008.[10] As discussed in detail in William Hogg's declaration, the pace at which AT&T needs to put spectrum into operation is rapidly increasing with the increase in demand in certain major markets. In 2004, AT&T needed to add 10 MHz every 24 months.[11] Today, AT&T's UMTS growth in certain major markets is consuming an additional 10 MHz of spectrum in half the time or less.[12] As discussed in more detail below, AT&T has responded to the dramatic increase in demand with massive capital investments to increase capacity and by introducing tiered pricing for data services, with more intensive data users paying more and less intensive users paying less.

21. But such responses alone are not sufficient to enable AT&T to meet projected demand. Analysts expect growth in wireless data traffic to continue to increase dramatically in coming years. As summarized in Figure 4, the average of three forecasts reported by the FCC indicates that mobile data traffic growth in 2014 will be 35 times the 2009 level. The FCC notes that "[i]n all three forecasts, the trend remains upward in 2014, implying continued growth beyond the forecast period."[13]

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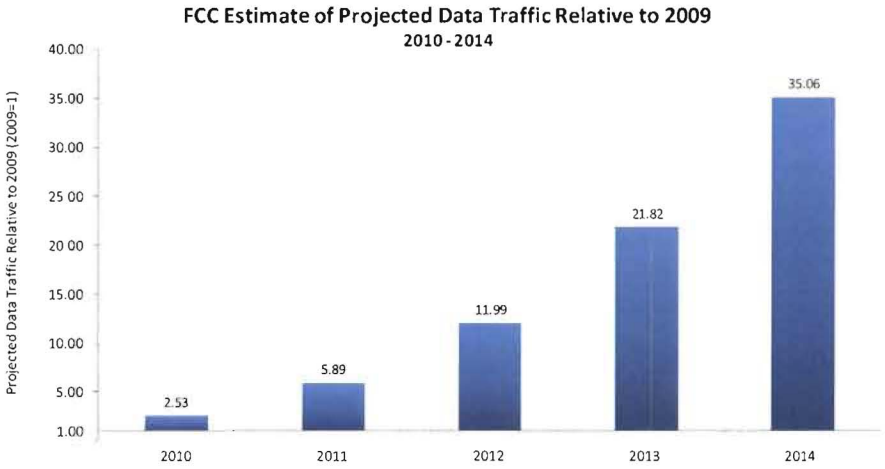
customized for- mobile content (for example, text and multimedia messaging, or the capacity to download ringtones and games)." FCC, "Internet Access Services: Status as of June 30, 2010," March 2011, p. 81.

8. JP Morgan, "U.S. Telecom Services and Towers," January 13, 2011, p. 29.
9. Hogg Declaration, ¶4.
10. AT&T estimates.
11. Hogg Declaration, ¶6.
12. Hogg Declaration, ¶6.
13. FCC, Mobile Broadband: The Benefits of Additional Spectrum, October 2010, p. 9. The FCC cites estimates by "respected industry sources of Cisco Systems, Coda Research and the Yankee Group."

Figure 4



Source: Federal Communications Commission, *Mobile Broadband: The Benefits of Additional Spectrum*, October 2010, exhibit 10, p. 18.

22. This projected growth is driven by expected increases in the utilization of smartphones, connected devices and computers in accessing wireless services and increases in the demand for wireless video services. Credit Suisse forecasts that the number of smartphones in North America is expected to more than triple between 2009 and 2015, increasing from 64 million to 224 million. [14] One of the forecasts cited by the FCC, by Cisco Systems, notes that "[b]ecause mobile video content has much higher bit rates than other mobile content types, mobile video will generate much of the mobile traffic growth through 2015. Of the 6.3 exabytes per month crossing the mobile network by 2015, 4.2 exabytes will be due to video." [15] As this suggests, the share of wireless revenue generated by wireless services is expected to grow and will soon account for the majority of wireless revenue. For example,

14. Credit Suisse, "Convergence 2010", July 15, 2010, p. 6.
15. Cisco, "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2010-2015," p. 8.

Guggenheim Securities projects that "...wireless data revenue will crest the 50% mark in the United States sometime in the 2012 calendar year."[16]

23. Analysts also recognize that the dramatic growth in demand is expected to result in significant congestion of wireless networks.

> Powerful smartphones, fast networks, compelling applications, and user awareness are causing a dramatic surge in the use of mobile-broadband technology. ... But there is a problem. There simply is not enough network capacity to address the emerging demand, and we are already witnessing the effects of network congestion, with many users complaining of slow network operation on some networks. Capacity is based on a number of factors, but foremost is the amount of spectrum available for broadband services. The FCC chairman himself recently stated that he saw the biggest threat to the future of mobile activity in America as the looming spectrum crisis.[17]

24. The FCC and others recognize that wireless carriers face a spectrum shortage as the result of the projected demand for data services. The FCC noted in October 2010 that "even when using conservative assumptions about the market factors that affect spectrum need, it is likely that spectrum will become an increasingly scarce resource in the near term and that freeing spectrum for mobile broadband use over the next five years will entail significant economic benefits."[18] The FCC's analysis validated the need for additional spectrum and the recommendation in the National Broadband Plan for the FCC to make available 500 MHz of new spectrum for wireless services.[19]

B. THE GROWTH IN DEMAND FOR WIRELESS SERVICE IS OUTSTRIPPING AT&T'S ABILITY TO EXPAND CAPACITY AND PROVIDE HIGH QUALITY SERVICE.

25. AT&T has invested heavily in expanding its wireless network capacity in response to increased demand. Over the last three years, AT&T has spent $21.1 billion in upgrading and expanding

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16. Guggenheim Securities, "Telecommunications Services – Wireless Voice & Data Plan Summary Detail Version 1.2", December 15, 2010, p. 3.
17. Rysavy Research, "Mobile Broadband and Capacity Constraints and the Need for Optimization," February 24, 2010, p. 4.
18. FCC, "Mobile Broadband: The Benefits of Additional Spectrum", October 2010, p. 6.
19. FCC, "Mobile Broadband: The Benefits of Additional Spectrum", October 2010, p. 2.

its wireless network.[20] AT&T has upgraded UMTS cell sites with more spectrally efficient HSPA+ and is expanding UMTS and HSPA+ deployment to the remaining GSM-only sites (where spectrum is available).[21] In addition, AT&T is beginning to deploy LTE in areas that account for 80 percent of the population of the United States, a project that it expects to be complete by 2013.[22]

26. AT&T has been spending **[Begin Confidential Information]** **[End Confidential Information]** per year to expand capacity by adding more cell sites (cell splitting) and optimizing existing sites through antenna tilts and other technical modifications.[23] AT&T is also attempting to ease network congestion by shifting data traffic off of its wireless network. For example, AT&T offers free WiFi access to its smartphone customers in 24,000 locations and has installed distributed antenna systems (DAS) in certain locations with high traffic concentration in an effort to offload traffic from its cell site network.[24] However, as discussed below, these alternatives have serious limitations in terms of their ability to move a significant volume of traffic off of AT&T's wireless network.

27. AT&T has also adopted tiered pricing of data services, in which more intensive data users pay more and less intensive users pay less, in an effort to help manage network traffic. AT&T's tiered pricing plan, introduced in June 2010, gave existing data customers the ability to remain on their existing unlimited plans or to opt into one of the new plans to save money.[25]

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20. AT&T Annual Reports, 2010, p. 71, 2008, p. 60.
21. Hogg Declaration, ¶22.
22. Hogg Declaration, ¶27.
23. Hogg Declaration, ¶8.
24. Hogg Declaration, ¶8. AT&T Press Release, "AT&T Announces New Lower-Priced Wireless Data Plans to Make Mobile Internet More Affordable to More People," June 2, 2010.
25. The new tiered pricing plans offer subscribers a choice between AT&T's Data Plus plan, which lowers fees to $15 per month for subscribers that use less than 200 MB and charges an additional $15 per month for each additional 200 MB block accessed in the month, and AT&T's Data Pro plan, which lowers fees to $25 per month for subscribers that use less than 2 GB and charges an additional $10 per month for each additional 1 GB block accessed in the month. When launched, the new plans potentially reduce price for more than 95 percent of data subscribers. Telecommunications Reports, AT&T Deploys Tiered Data Plans, June 15, 2010.

28. Despite these ongoing efforts to expand network capacity, AT&T is still facing difficulties in a number of areas, including many that are important to its ability to succeed on a national basis. Problems with dropped and blocked calls and slow data services faced by subscribers in areas such as New York and San Francisco have been widely reported in the press.[26] Further, because these areas are centers of media attention, poor network performance in these major cities can hurt AT&T's ability to attract customers everywhere.

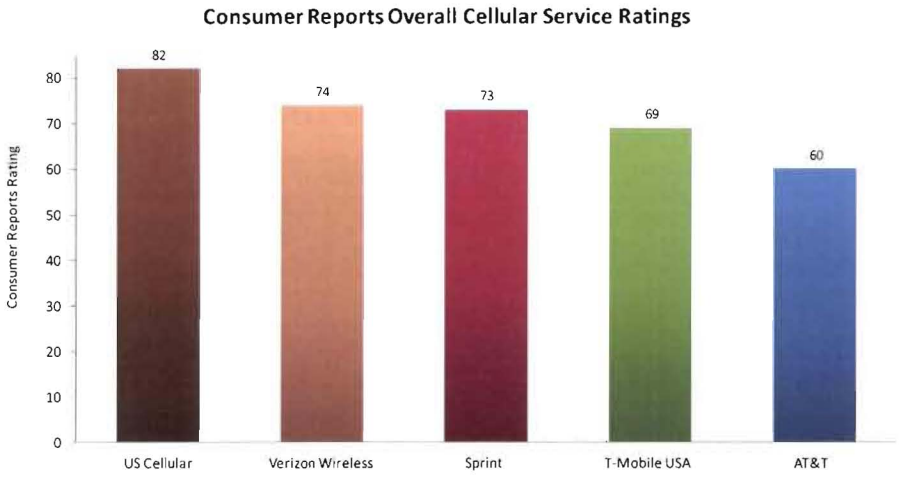
29. Indeed, consumer testing groups and surveys of customer satisfaction typically rate AT&T lower than Verizon and Sprint. Consumer Reports' January 2011 ratings of wireless services, for example, concluded that Verizon Wireless, Sprint and U.S. Cellular had the highest overall consumer satisfaction for wireless service, with AT&T last among the carriers rated. Similar results held in each of the 23 cities evaluated by Consumer Reports.[27]

AT&T Press Release, "AT&T Announced New Lower-Priced Wireless Data Plans to Make Mobile Internet More Affordable to More People," June 2, 2010.

26. New York Times, "Bringing You a Signal You're Already Paying For," April 6, 2010. San Francisco Chronicle, "AT&T's challenge: retaining iPhone users", February 10, 2011.

27. Consumer Reports website, updated January 2011 (subscription required). See also http://www.changewaveresearch.com/articles/2010/05/wireless_service_20100504.html.

Figure 5



Source: Consumer Reports, January 2011.

C. THE ABILITY OF AT&T AND T-MOBILE USA TO RESPOND TO INCREASED DEMAND IS LIMITED BY THEIR OPERATION OF MULTIPLE NETWORKS OVER MULTIPLE SPECTRUM BANDS.

30. In evaluating the rationale for the proposed transaction, it is important to recognize that AT&T and T-Mobile USA mobile operate multiple wireless networks, not just one. Specifically, AT&T operates a GSM network, a UMTS/HSPA/HSPA+ network and is now deploying an LTE network.[28] T-Mobile USA operates a GSM network as well as a UMTS/HSPA/HSPA+ network. These networks and the spectrum bands they operate on are summarized in Table 1 below.

31. AT&T's network footprint covers over 300 million people in the U.S.[29] The AT&T UMTS/HSPA/HSPA+ network currently covers roughly 260 million people and is being expanded to cover 100 percent of AT&T's network footprint.[30] AT&T's GSM network serves roughly **[Begin Confidential Information] [End Confidential Information]** million subscribers and its UMTS/HSPA/HSPA+ network

28. AT&T expects to launch LTE service in mid-2011. http://www.fiercewireless.com/story/ t-launching-lte-mid-2011/2010-09-16
29. Hogg Declaration, ¶18.
30. Hogg Declaration, ¶22.

serves roughly **[Begin Confidential Information] [End Confidential Information]** million subscribers.[31] AT&T's current plans call for its LTE network to cover 80 percent of the U.S. population and will expand this footprint to over 97 percent of the population as part of the proposed transaction.[32]

32. T-Mobile USA's network footprint covers roughly 86 percent of the U.S. population.[33] The T-Mobile USA UMTS/HSPA/HSPA+ network currently covers 64 percent of the population.[34] T-Mobile USA's GSM network serves roughly **[Begin Confidential Information] [End Confidential Information]** million subscribers and its UMTS/HSPA/HSPA+ network serves roughly **[Begin Confidential Information] [End Confidential Information]**million subscribers.[35] T-Mobile USA has no current plans to deploy LTE services.[36]

Table 1

AT&T and T-Mobile USA Networks and Spectrum

Spectrum	AT&T			T-Mobile USA		
Band	GSM	UMTS/HSPA	LTE	GSM	UMTS/HSPA	LTE
700 MHz			UC			
850 MHz	X	X				
1900 MHz	X	X		X		
AWS			UC		X	

X: Active; UC: Under Construction

33. The ability of a carrier to respond to increases in demand is limited due in part to the limited capabilities of existing handsets in accessing new technologies. While handsets are generally backward compatible so a UMTS/HSPA/HSPA+ handset can access GSM services if only GSM services are available in an area, older GSM-only devices cannot access UMTS/HSPA/HSPA+ networks. Thus, carriers

31. Hogg Declaration, ¶¶18, 22.
32. Hogg Declaration, ¶¶27, 59.
33. Larsen Declaration, ¶11.
34. Larsen Declaration, ¶11.
35. Larsen Declaration, ¶11.
36. Larsen Declaration, ¶9.